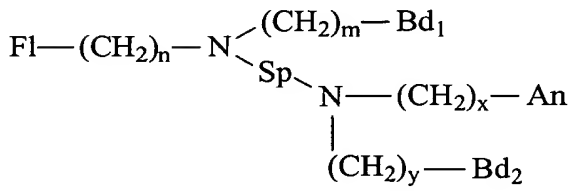
Abstract

Disclosed is a modular fluorescence sensor having the following general formula:



where ~~Where~~ Fl is a fluorophore, N is a nitrogen atom, B_{d1} and B_{d2} are independently selected binding groups, Sp is an aliphatic spacer, and *An* is an anchor group for attaching the sensor to solid substrates. n = 1 or 2, m = 1 or 2, x is an integer, and y = 1 or 2. The binding groups are capable of binding an analyte molecule to form a stable 1:1 complex. In a preferred embodiment, the B_{d1} is R_1-$B(OH)_2$ and B_{d2} is R_2-$B(OH)_2$. R_1 and R_2 are aliphatic or aromatic functional groups selected independently from each other and B is a boron atom. The present invention also provides methods of synthesizing a modular fluorescence sensor and its use in labeling solid substrates.

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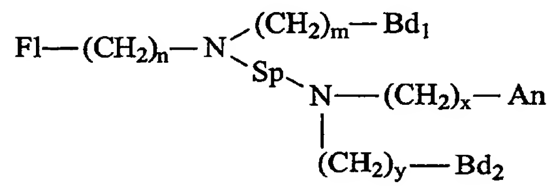

Where Fl is a fluorophore, N is a nitrogen atom, B_{d1} and B_{d2} are independently selected binding groups, Sp is an aliphatic spacer, and *An* is an anchor group for attaching the sensor to solid substrates. n = 1 or 2, m = 1 or 2, x is an integer, and y = 1 or 2. The binding groups are capable of binding an analyte molecule to form a stable 1:1 complex. In a preferred embodiment, the B_{d1} is R_1-$B(OH)_2$ and B_{d2} is R_2-$B(OH)_2$. R_1 and R_2 are aliphatic or aromatic functional groups selected independently from each other and B is a boron atom. The present invention also provides methods of synthesizing a modular fluorescence sensor and its use in labeling solid substrates.